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मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3876 (1985): Knife, Plaster, Dental [MHD 8: Dentistry]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR KNIFE, PLASTER, DENTAL

(First Revision)

1. Scope — Specifies material, dimensions and other requirements of plaster knife used in dentistry.

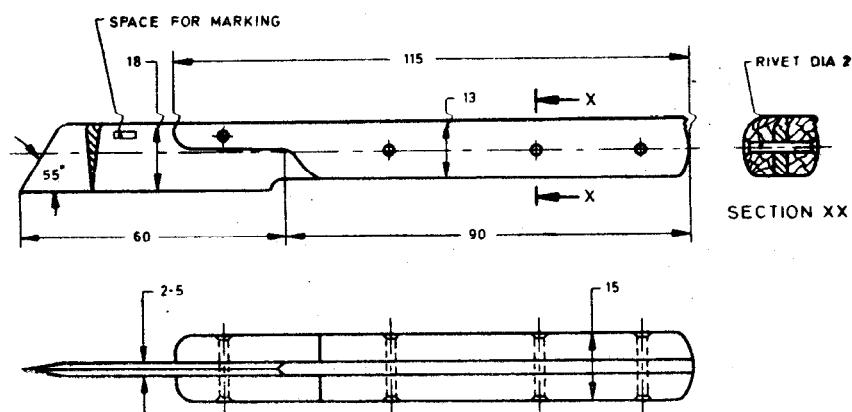
2. Material

2.1 Blade — Stainless steel of designation 30Cr13 of IS : 6911-1972 'Specification for stainless steel plate sheet and strip'.

2.2 Handle Scales — Wood conforming to IS : 620-1975 'General requirements for wooden tool handles (third revision)'.

2.3 Rivets — Mild steel.

3. Shape and Dimensions — As shown in Fig. 1.



All dimensions in millimetres.

FIG. 1 KNIFE, PLASTER, DENTAL

3.1 Tolerances on various dimensions shall be permitted as given below:

- a) ± 0.1 mm on dimensions up to 5.0 mm;
- b) ± 0.2 mm on dimensions above 5.0 mm and up to 20.0 mm;
- c) ± 0.5 mm on dimensions above 20.0 mm and up to 50.0 mm;
- d) ± 1.0 mm on dimensions above 50.0 mm and up to 100.0 mm; and
- e) ± 1.5 mm on dimensions above 100.0 mm.

3.2 Tolerances on angular dimensions shall be $\pm 1^\circ$.

4. Manufacture — The blade of the knife shall be forged and shaped as shown in Fig. 1. The blade and the handle scales shall be secured by means of rivets with scales fitting closely to the tang throughout its length. The rivetting shall be firm, secure and sound and the rivets shall be finished flush with the surface of the scales on both sides.

5. Workmanship and Finish

5.1 The blade shall be free from cracks, seams, scales, pits, burrs and other surface defects. The handle after rivetting shall be finished smooth all over,

5.2 The cutting edge shall be semi-sharp and shall be able to cut set plaster of paris and stone-plaster without being damaged (see 7.2).

5.3 The blade and the handle shall be in alignment, that is, the cutting edge of the blade shall lie in the central plane of the handle scales.

5.4 The blade shall be finished bright and passivated.

5.4.1 The blade shall be passivated by treating it in 10 percent (v/v) nitric acid solution for not less than 30 minutes at a temperature of not less than 10°C and not exceeding 60°C. The blade shall be rinsed in water and dried in hot air.

6. Heat Treatment — The blade shall be uniformly hardened and tempered to a hardness of 500 to 550 HV, when tested in accordance with IS : 1501-1968 'Method for Vickers hardness test for steel (first revision)'.

7. Tests

7.1 Corrosion Resistance — The blade of the knife shall be tested in accordance with the test specified in IS : 7531-1975 'Method for boiling and autoclaving test for corrosion resistance of stainless steel surgical instruments'. It shall show no sign of corrosion after the test.

7.2 Performance Test — The plaster knife shall cut a 20 mm thick slab of set plaster of paris and stone-plaster. The test shall be repeated 10 times. There shall be no damage to the knife or cutting edge after the test. The plaster of paris or stone-plaster slab shall be prepared as detailed in 7.2.1 and 7.2.2.

7.2.1 Plaster of paris slab — Mix 100 g of plaster of paris powder ($\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ known as β calcium hemihydrate) with 60 ml of water at room temperature. The mixture shall be spatulated with the help of plaster spatula for a period of 2 minutes till it attains a smooth creamy mix and then vibrated to eliminate the air bubbles from the mixture. The mixture shall be poured into the cast and again vibrated to further eliminate the air bubbles and then allowed to set for a period of 15 to 20 minutes. The cast shall then be taken out and dried for a period of 24 hours till it attains a compressive strength of 2380 N.

7.2.2 Stone-Plaster Slab — Mix 100 g of stone-plaster powder ($\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ known as α calcium hemihydrate) with 20 to 28 ml of water at room temperature. The cast shall be prepared in a similar way as from plaster of paris and dried till it has a compressive strength of 6000 N.

8. Marking — The plaster knife shall be legibly and indelibly marked with the manufacturer's name, initials or registered trade-mark, the words 'Stainless Steel' on its blade, and the country of manufacture.

8.1 ISI Certification Marking — Details available with the Indian Standards Institution.

9. Packing — Each knife shall be wrapped either in a polyethylene bag or a wax paper. The knives shall then be packed in cartons in accordance with the current trade practices. The carton shall bear the name of the instrument, manufacturer's name, initials or registered trade-mark and the country of manufacture.

9.1 Alternatively, it may be packed as agreed to between the purchaser and the supplier.

10. Sampling

10.1 Sampling procedure and acceptance criteria for plaster knife, dental shall be as agreed to between the purchaser and the supplier. A recommended scheme for the same is given in Appendix A.

APPENDIX A

(Clause 10.1)

SAMPLING SCHEME AND CRITERIA FOR CONFORMITY FOR KNIFE, PLASTER, DENTAL

A-1. Lot — In any consignment, all the knives produced for the same material under similar conditions shall constitute a lot.

A-2. The number of knives to be selected from each lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

TABLE 1 SAMPLING AND CRITERIA FOR CONFORMITY

(Clause A-2)

Lot Size <i>N</i>	Sample Size <i>n</i>
Up to 15	2
16 „ 50	3
51 „ 150	5
151 and above	8

A-2.1 These knives shall be selected from the lot at random and in order to ensure the randomness of selection, procedures given in IS : 4905-1968 'Methods for random sampling' may be followed.

A-3. Number of Tests and Criteria for Conformity — All the knives selected at random in accordance with col 1 and 2 of Table 1 shall be tested for shape and dimensions, workmanship and finish, heat treatment, corrosion resistance and performance test. The lot shall be considered as conforming to these requirements if none of the knives in the sample is found to be defective in any of these tests.

EXPLANATORY NOTE

This standard was first published in 1967. The revised standard is in line with the present day trade practices prevalent in the dental instruments industry.

In this revision tolerances on linear and angular dimensions, proper references to raw materials and sampling plan have been specified.